

Abstract Submitted
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Protein adsorption at polyethylene oxide brushes of various surface coverage WARREN TAYLOR, RICHARD JONES, University of Sheffield, UK — The adsorption of proteins onto surfaces enables the unwanted formation of Bio-films that are detrimental to a wide range of applications as diverse as artificial implants and the hulls of ocean liners. A surface that exhibits excellent protein resistant behavior is polyethylene oxide brushes (PEO). The amount of adsorbed protein at a brush surface is related to the grafting density and molecular weight of the PEO chains. However it has not yet been proven experimentally where the proteins adsorb and therefore why the brush offers resistance to adsorption. There are three suspected modes of adsorption; “primary”, at the substrate, “secondary”, at the edge of the brush and “tertiary”, within the brush. Recently theoretical work by Katira et al has proposed a random sequential model, explaining the adsorption of proteins at brushes. In this theory the proteins adsorb at random surface sites, which are not covered by the brush. As the surface coverage of the chains increases, the number of available adsorption sites decreases. This theory is in agreement with experimental work carried out in our group.

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